

AMENDMENTS TO THE CLAIMS

Please amend Claims 1, 4, 9, 11-16, 24, and 29 as follows:

- 1 1. (Currently Amended) A method of optimizing retrieval of electronic documents,
 2 comprising the computer-implemented steps of:
 3 receiving and routing network packets;
 4 extracting ~~receiving~~ a first electronic document ~~from the network packets~~;
 5 identifying one or more symbolic references to other electronic documents
 6 within the first electronic document;
 7 determining a network address of each of the other electronic documents
 8 corresponding to each of the symbolic references;
 9 creating and storing ~~on a cache server~~ a modified copy of the first electronic
 10 document in which the network address is substituted for each
 11 corresponding symbolic reference in accordance with one or more
 12 substitution policies;
 13 delivering the modified copy of the electronic document in response to all
 14 subsequent client requests for the first electronic document.
- 1 2. (Original) A method as recited in Claim 1, further comprising the steps of
 2 delivering an unmodified copy of the first electronic document in response to a
 3 client request for the first electronic document, concurrently while performing the
 4 steps of identifying, determining, creating and storing.
- 1 3. (Original) A method as recited in Claim 1, further comprising the steps of:
 2 determining that a plurality of the symbolic references identify one particular
 3 host name;
 4 substituting a different network address in each of the symbolic references
 5 that identify the particular host name, wherein each different network
 6 address is associated with one of a plurality of replicated servers.

- 1 4. (Currently Amended) A method as recited in Claim 1, further comprising the
2 steps of creating and storing the modified copy in cache storage ~~of a cache server~~
3 ~~that executes the method~~; delivering the modified copy from the cache in response
4 to all subsequent client requests for the first electronic document.
- 1 5. (Original) A method as recited in Claim 4, further comprising the steps of:
2 retrieving and storing in the cache storage, each of the other electronic
3 documents;
4 carrying out the steps of identifying, determining, creating and storing, and
5 delivering for each of the other electronic documents in the cache storage,
6 before or at the same time as receiving one or more client requests for the
7 other electronic documents.
- 1 6. (Original) A method as recited in Claim 1, further comprising the steps of:
2 determining that one or more of the symbolic references identifies a
3 prohibited network resource;
4 substituting a network address of a pre-determined network resource for the
5 symbolic references to the prohibited network resource.
- 1 7. (Original) A method as recited in Claim 6, wherein the pre-determined
2 network resource is a pre-defined electronic document that comprises a message
3 specifying that access to the prohibited network resource is prohibited.
- 1 8. (Original) A method as recited in Claim 1, wherein the electronic document
2 comprises an HTML document, and wherein the symbolic references comprise
3 only embedded URLs in the HTML document.
- 1 9. (Currently Amended) A method as recited in Claim 1, wherein the electronic
2 document comprises an HTML document, and wherein the symbolic references
3 comprise only selected URLs in the HTML document as determined according to
4 a ~~selection~~ substitution policy.

1 10. (Original) A method as recited in Claim 1, wherein the electronic document
2 comprises an HTML document, and wherein the symbolic references comprise all
3 URLs in the HTML document.

1 11. (Currently Amended) A method of optimizing access to a network resource,
2 comprising the computer-implemented steps of:
3 receiving a network resource that contains one or more embedded symbolic
4 host name references;
5 determining a network address corresponding to each of the embedded
6 symbolic host name references;
7 creating and storing on a cache server a modified copy of the network
8 resource in which a network address is substituted for each corresponding
9 embedded symbolic host name reference in accordance with one or more
10 substitution policies;
11 using the modified copy of the network resource in responding to all
12 subsequent client requests for the network resource, thereby greatly
13 reducing the required number of network address lookup operations.

1 12. (Currently Amended) A router that includes a stored program comprising one or
2 more sequences of instructions for optimizing retrieval of network resources,
3 wherein execution of the one or more sequences of instructions by one or more
4 processors causes the one or more processors to perform the steps of:

5 receiving and routing network packets;
6 ~~receiving~~ extracting data packets of a network resource that contain[[s]] one
7 or more embedded symbolic host name references;
8 determining a network address corresponding to each of the embedded
9 symbolic host name references;
10 creating and storing on the router a modified copy of the network resource in
11 which a network address is substituted for each corresponding embedded

12 symbolic host name reference in accordance with one or more
13 substitution policies;
14 using the modified copy of the network resource in delivering the network
15 resource to a client, thereby greatly reducing the required number of
16 network address lookup operations.

1 13. (Currently Amended) A cache server that includes a computer-readable medium
2 carrying one or more sequences of instructions for optimizing retrieval of network
3 resources, wherein execution of the one or more sequences of instructions by one
4 or more processors causes the one or more processors to perform the steps of:
5 receiving a network resource that contains one or more embedded symbolic
6 host name references;
7 determining a network address corresponding to each of the embedded
8 symbolic host name references;
9 creating and storing on the cache server a modified copy of the network
10 resource in which a network address is substituted for each corresponding
11 embedded symbolic host name reference in accordance with one or more
12 substitution policies;
13 using the modified copy of the network resource in responding to all
14 subsequent client requests for the network resource, thereby greatly
15 reducing the required number of network address lookup operations.

1 14. (Currently Amended) A proxy server that includes a computer-readable medium
2 carrying one or more sequences of instructions for optimizing retrieval of network
3 resources, wherein execution of the one or more sequences of instructions by one
4 or more processors causes the one or more processors to perform the steps of:
5 receiving a network resource that contains one or more embedded symbolic
6 host name references;

7 determining a network address corresponding to each of the embedded
 8 symbolic host name references;
 9 creating and storing on the proxy server a modified copy of the network
 10 resource in which a network address is substituted for each corresponding
 11 embedded symbolic host name reference in accordance with one or more
 12 substitution policies;
 13 using the modified copy of the network resource in responding to all
 14 subsequent client requests for the network resource, thereby greatly
 15 reducing the required number of network address lookup operations.

1 15. (Currently Amended) Apparatus for optimizing retrieval of electronic documents,
 2 comprising:

3 means for receiving and routing network packets;
 4 means for extracting ~~receiving~~ a first electronic document from the network
 5 packets;
 6 means for identifying one or more symbolic references to other electronic
 7 documents within the first electronic document;
 8 means for determining a network address of each of the other electronic
 9 documents corresponding to each of the symbolic references;
 10 means for creating and storing on a cache server a modified copy of the first
 11 electronic document in which the network addresses are substituted for
 12 all corresponding symbolic references in accordance with one or more
 13 substitution policies;
 14 means for delivering the modified copy of the electronic document in
 15 response to all subsequent client requests for the first electronic
 16 document.

1 16. (Currently Amended) A computer-readable medium carrying one or more
 2 sequences of instructions for optimizing retrieval of network resources, wherein

execution of the one or more sequences of instructions by one or more processors
causes the one or more processors to perform the steps of:

receiving and routing network packets;

extracting ~~receiving~~ a network resource that contains one or more embedded
symbolic host name references from the network packets;

determining a network address corresponding to each of the embedded
symbolic host name references;

creating and storing ~~on a cache server~~ a modified copy of the network
resource in which a network address is substituted for each corresponding
embedded symbolic host name reference in accordance with one or more
substitution policies;

using the modified copy of the network resource in responding to all
subsequent client requests for the network resource, thereby greatly
reducing the required number of network address lookup operations.

17. (Original) A computer-readable medium as recited in Claim 16, further
comprising the steps of delivering an unmodified copy of the first electronic
document in response to a client request for the first electronic document,
concurrently while performing the steps of identifying, determining, creating and
storing.

18. (Original) A computer-readable medium as recited in Claim 16, further
comprising the steps of:
determining that a plurality of the symbolic references identify one particular
host name;
substituting a different network address in each of the symbolic references
that identify the particular host name, wherein each different network
address is associated with one of a plurality of replicated servers.

- 1 19. (Original) A computer-readable medium as recited in Claim 16, further
2 comprising the steps of creating and storing the modified copy in cache storage of
3 a cache server that executes the method; delivering the modified copy from the
4 cache in response to all subsequent client requests for the first electronic
5 document.
- 1 20. (Original) A computer-readable medium as recited in Claim 19, further
2 comprising the steps of:
3 retrieving and storing in the cache storage, each of the other electronic
4 documents;
5 carrying out the steps of identifying, determining, creating and storing, and
6 delivering for each of the other electronic documents in the cache storage,
7 before or at the same time as receiving one or more client requests for the
8 other electronic documents.
- 1 21. (Original) A computer-readable medium as recited in Claim 16, further
2 comprising the steps of:
3 determining that one or more of the symbolic references identifies a
4 prohibited network resource;
5 substituting a network address of a pre-determined network resource for the
6 symbolic references to the prohibited network resource.
- 1 22. (Previously Presented) A computer-readable medium as recited in Claim
2 16, wherein the pre-determined network resource is a pre-defined electronic
3 document that comprises a message specifying that access to a prohibited network
4 resource is prohibited.
- 1 23. (Original) A computer-readable medium as recited in Claim 16, wherein the
2 electronic document comprises an HTML document, and wherein the symbolic
3 references comprise only embedded URLs in the HTML document.

- 1 24. (Currently Amended) A computer-readable medium as recited in Claim 16,
2 wherein the electronic document comprises an HTML document, and wherein the
3 symbolic references comprise only selected URLs in the HTML document as
4 determined according to a ~~selection~~ substitution policy.
- 1 25. (Original) A computer-readable medium as recited in Claim 16, wherein the
2 electronic document comprises an HTML document, and wherein the symbolic
3 references comprise all URLs in the HTML document.
- 1 26. (Original) A method as recited in Claim 1, wherein the step of determining a
2 network address of each of the other electronic documents corresponding to each
3 of the symbolic references comprises load balancing by the steps of successively
4 selecting a different one of a plurality of pre-determined network addresses of a
5 plurality of servers for substitution for successive identical symbolic hostname
6 references.
- 1 27. (Original) A computer-readable medium as recited in Claim 16, wherein the
2 step of determining a network address of each of the other electronic documents
3 corresponding to each of the symbolic references comprises load balancing the
4 steps of successively selecting a different one of a plurality of pre-determined
5 network addresses of a plurality of servers for substitution for successive identical
6 symbolic hostname references.
- 1 28. (Original) A method as recited in Claim 1, wherein the electronic document
2 comprises an HTML document, and wherein the symbolic references comprise
3 hostnames in embedded URLs in the HTML document and hostnames in
4 hyperlinks in the HTML document.
- 1 29. (Currently Amended) A method of optimizing retrieval of electronic documents,
2 comprising the computer-implemented steps of:
3 receiving and routing network packets;
4 extracting ~~receiving~~ a first electronic document from the network packets;

5 identifying one or more symbolic host names contained only in one or more
6 embedded Universal Resource Locators (URLs) within the first electronic
7 document;
8 determining a network address of each host corresponding to each of the host
9 names;
10 creating and storing on a cache server a modified copy of the first electronic
11 document in which the network address is substituted for each of the host
12 names in accordance with one or more substitution policies;
13 delivering the modified copy of the electronic document in response to all
14 subsequent client requests for the first electronic document.

1 30. (Original) A method as recited in Claim 29, further comprising the steps of:
2 identifying one or more second host names contained in one or more
3 hyperlinks delineated by anchor tags within the first electronic document;
4 determining a second network address of each second host corresponding to
5 each of the second host names;
6 storing the second network addresses in place of each of the second host
7 names in the modified copy of the first electronic document.